OAK RIDGE NATIONAL LABORATORY
MANAGED BY UT-BATTELLE FOR THE U.S. DEPARTMENT OF ENERGY

Norbert Holtkamp
Accelerator Systems Division
Division Director

PHONE: (865) 241-6945
FAX: (865) 241-6739
Cell Phone: (865) 919 1070
E-MAIL: holtkamp@sns.gov

10/14/2003

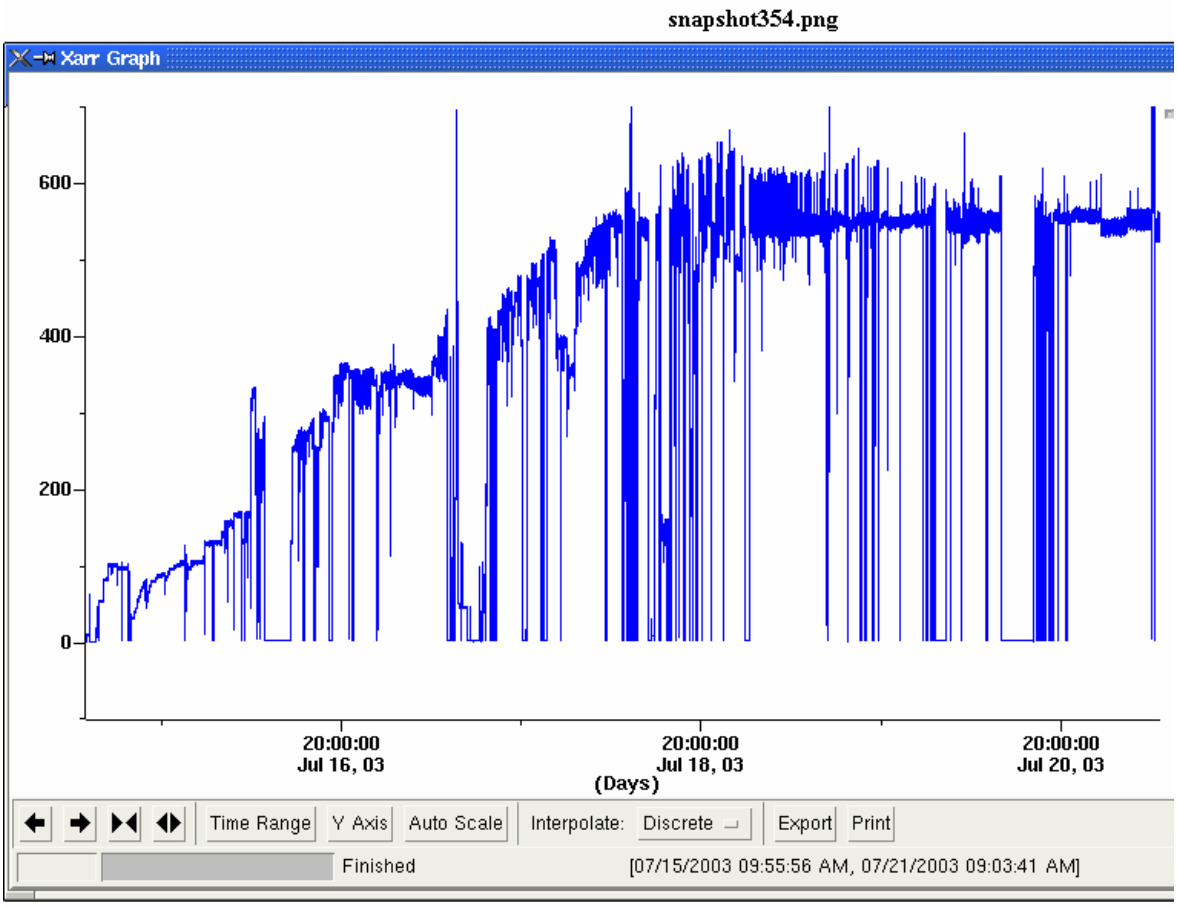
Good News and Bad News

During the last few weeks a lot of work to get tank 1 online and processed finally paid off and the tanks is now operating above design gradients at 30 Hz repetition rate and full pulse length (1/2 of the design duty cycle). The conditioning of the tank, although expected to be much more difficult than tank 3 due to the different geometry went extremely smooth with excellent vacuum performance during ramp up. All support systems are integrated and we are ready for the ARR on August 12 at this point.

In the production of the drift tubes for tank 4,5,6 we continue to have problems. Although overall they are deemed to be small and mainly procedural, we were forced to stop production for the second time now since some of the welds showed cracking. A detailed technical description from the LANL lead engineer with a path forward follows in the next paragraph. From the new bottoms up schedule that is shown in the table, drift tube delivery will not occur before the middle of September. Oak Ridge and LANL are working closely together to minimize the schedule impact by trying to compress as much work as possible in preparing tanks into this additional six weeks. Details will depend on the exact path forward to be chosen, most likely known by the end of next week.

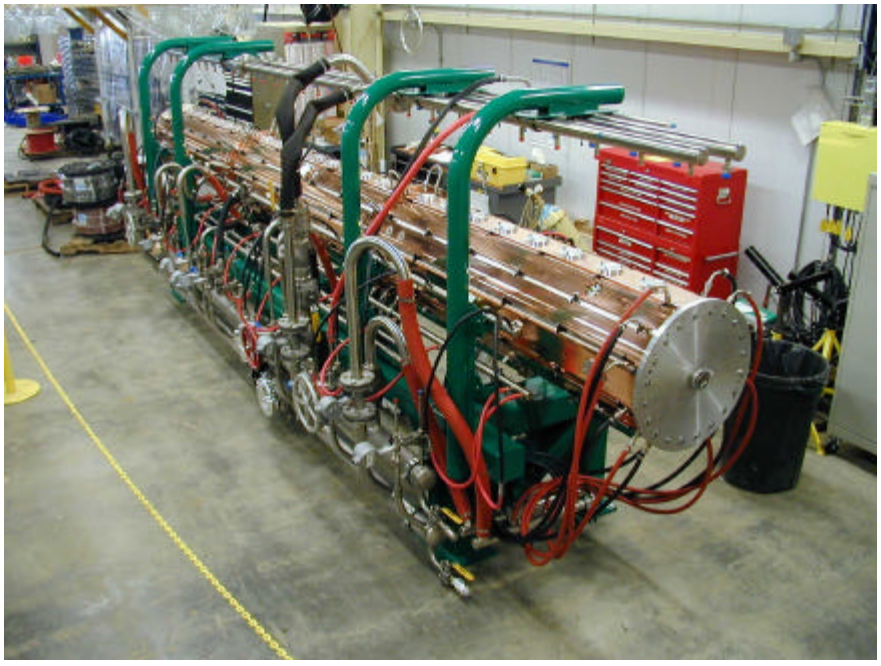
The currently projected 6 week schedule slippage in the tank four drift tubes delivery is the result of several issues:(1) Accumulated small delays such as welding machine downtime, personnel absences at vendors, delays in completing weld qualifications, etc. (2) Halt of work to determine cause of water channel weld leaks after diverter brazing; although these leaks occurred on only a few units it was deemed prudent to stop production until the leaks and their cause(s) were understood and rectified to ensure highest quality hardware to be shipped to Oak Ridge. A change in procedures (diverter brazing is now done prior to water channel e-beam welding) to prevent this type of leak was developed along with a repair procedure for existing or potential leaks; these actions required time and production was slowed or stopped during this time. (3) The first water channel repair weld qualification tests showed pre-existing cracks at the root of the welds and although the weld repair has been modified to fully consume and eliminate these cracks and fabrication procedures changed to prevent the cracks, these changes have not been proven in a high fidelity test article. Such tests are underway. There is also a prototype drift tube incorporating a combined water channel and end cap weld being fabricated in the event the crack repair/prevention procedures to existing designs are not successful.

At Oak Ridge final system tests and shielding installation for DTL-1 was completed in early July in preparation for conditioning which began last week. A power level of 600 kW with a pulse length of 1 ms and frequency of 30 Hz was achieve on Saturday (7-19-03) and maintained for ~3 days. This power level corresponds to ~20% over the full field level in DTL-1 during operation. Conditioning was completed on Tuesday (7-22-03) with all conditioning goals archived.



DTL-1 Conditioning Power Level in kWatt versus time

Installation of the cooling manifold on DTL-4 in the FE building is 75 % complete. This will be completed next week.



DTL-4 Cooling Manifold Installation

The delivery schedule for DTL-4 drift tubes to SNS, has been delayed 5-6 weeks due to manpower and equipment problems at Hanford where welding is performed. Additional schedule delays that will affect DTL-4, -5, and -6 drift tubes are expected due to thermal stress induced cracks in the water channel welds that are caused by the cap welds. LANL is investigating fixes for this problem and the schedules impacts. ASD is considering various strategies to minimize the overall impact on the DTL installation schedule, including changing the tank installation sequence and commissioning plans. Details of this impact will be released as soon as the exact schedule for the repairs is known and can be integrated into Oak Ridges installation and commissioning schedule.

		Tank 4					Tank 5				
Component	**Engineer**	Identifier	Quantity	Shipping Date	Delivered	Change from last week	Identifier	Quantity	Shipping Date	Delivered	Change from last week
Drift Tubes	Gentzlinger	4A	7	15-Sep-03	0		5E	8	9-Sep-03	0	
		4B	6	22-Sep-03	0		5F	7	15-Sep-03	0	
		4C	6	29-Sep-03	0		5G	8	22-Sep-03	0	
		4D	8	6-Oct-03	0						
Dummies	Gentzlinger			With DT Groups					With DT Groups		
EMDs	O'Hara		4	20-Oct-03	0			4	20-Oct-03	0	
BPMs	O'Hara		2	20-Oct-03	0			2	20-Oct-03	0	
Top hats	Rowton	1.25"	27	15-Sep-03	0		1.25"	23	9-Sep-03	0	
Shrouds	Rowton		27	15-Sep-03	0			23	9-Sep-03	0	
Endwalls	Turon		2	Complete	2			2	Complete	2	
Post Coupler Kits	Rowton		27	Bead Pull + 15	0			23	Bead Pull + 15	0	
Slug Tuners	Rowton		12	Bead Pull + 7	0			12	Bead Pull + 7	0	
Access Ports			2		0			2		0	
RF Grills			4		0			4		0	
Wave Guide-Iris	Valdiviez		1	30-Jul-03	0			1	7-Aug-03	0	
Window	Young		1	Complete	0	1		1	Complete	0	1
Stands	Turon		1	Complete	1			1	Complete	1	0

Milestones	Date	Date
Ready for RF		
Ready for Beam	**1-Dec-03**	**1-Dec-03**
Tank Commissioning complete	**1-Apr-04**	**1-Apr-04**

		Tank 6					Tank 2				
Component	**Engineer**	Identifier	Quantity	Shipping Date	Delivered	Change from last week	Identifier	Quantity	Shipping Date	Delivered	Change from last week
Drift Tubes	Gentzlinger	6H	10	30-Sep-03	0		2J	12	18-Sep-03	0	
		6I	11	8-Oct-03	0		2K	12	24-Sep-03	0	
							2L	11	30-Sep-03	0	
							2M	8	6-Oct-03	0	
Dummies	Gentzlinger			With DT Groups					None	0	
EMDs	O'Hara		4	1-Oct-03	0			4	1-Oct-03	0	
BPMs	O'Hara		2	1-Oct-03	0			2	1-Oct-03	0	
Top hats	Rowton	1.25"	21	30-Sep-03	0		.75"	41	18-Sep-03	0	
							1.00"	6	18-Sep-03		
Shrouds	Rowton		21	30-Sep-03	0			47	18-Sep-03	0	
Endwalls	Turon		2	Complete	2			2	Complete	2	
Post Coupler Kits	Rowton		21	Bead Pull + 15	0			27	Bead Pull + 15	0	
Slug Tuners	Rowton		12	Bead Pull + 7	0			12	Bead Pull + 7	0	
Access Ports			2		0			1		0	
RF Grills			4		0			4		0	
Wave Guide-Iris	Valdiviez		1	23-Aug-03	0			1	3-Sep-03	0	
Window	Young		1	28-Aug-03	0			1	28-Aug-03	1	
Stands	Turon		1	Complete	1	0		1	Complete		

Milestones	Date	Date
Ready for RF		
Ready for Beam	**1-Dec-03**	**1-Dec-03**
Tank Commissioning complete	**1-Apr-04**	**1-Apr-04**